IN THE CLAIMS

Please amend claims 1-6 and add new claims 7-16 as follows:

1. (Currently Amended) An open loop controller for a sampled grating distributed ~~B~~bragg reflector (SGDBR) laser, comprising:

a look up table of ~~voltages and~~ current settings, each entry in the table corresponding to a separate operating point of the SGDBR laser, each entry in the look up table comprising:

a first mirror current setting;

a second mirror current setting;

a phase current setting; and

a gain current setting,

the first mirror current setting, second mirror current setting, phase current setting, and gain current setting controlling at least one of a group comprising: an optical output power and an output wavelength of the SGDBR laser;

wherein when the controller is given a selected optical power and output wavelength, the controller selects an entry from the look up table to control the laser at substantially the selected optical power and output wavelength.

2. (Currently Amended) The controller of claim 1, further comprising a temperature regulator sensing and controlling a temperature of the SGDBR laser.

3. (Currently Amended) The controller of claim 2, wherein the temperature regulator regulates the temperature of the SGDBR laser to a fixed, pre-selected temperature.

4. (Currently Amended) The controller of claim 1, wherein the look up table is filled with unique values for each SGDBR laser.

5. (Currently Amended) The controller of claim 4, wherein the unique values of the look up table are determined using a calibration routine.

6. (Currently Amended) The controller of claim 1 wherein each entry in the look up table further comprises an optical amplifier current setting.

7. (New) The controller of claim 6 wherein the optical output power is adjusted by the optical amplifier current setting.

8. (New) The controller of claim 5, wherein the calibration routine comprises an incremental calibration routine where the SGDBR laser is stepped and locked to each channel using a calibrated wavelength locker as a reference.

9. (New) The controller of claim 5, wherein the calibration routine comprises a mirror reflectivity peak calibration routine where reflectivity peaks of the first mirror and the second mirror are determined, mirror tuning efficiency curves are generated from the reflectivity peaks and the first mirror current setting and the second mirror current setting for each entry in the look up table are determined from the mirror tuning efficiency curves.

10. (New) The controller of claim 9, wherein minima of a gain voltage measurement of the SGDBR laser is used to determine the reflectivity peaks.

11. (New) The controller of claim 1, further comprising a digital signal processor (DSP) for applying the current settings of the lookup table to operate the SGDBR laser.

12. (New) The controller of claim 11, further comprising a current source for each of the current settings, the current source including a digital to analog converter (DAC) coupled to a voltage to current amplifier (VI) where each current source is coupled to the DSP for applying the current settings of the lookup table to operate the SGDBR laser.

13. (New) The controller of claim 12, further comprising a programmable logic device (PLD) providing an interface between the DSP and each current source.

14. (New) The controller of claim 12, wherein the voltage to current amplifier comprises a modified Howland circuit.

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15. (New) The controller of claim 14, wherein the voltage to current amplifier further comprises a current mirror added to an amplifier output of the modified Howland circuit.

16. (New) The controller of claim 15, wherein the voltage to current amplifier further comprises a filter to reduce noise.